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Secret

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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

The Status of North Vietnam's Electric Power Industry as of 25 May 1967

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26 May 1967
No. 0651/67

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
26 May 1967

INTELLIGENCE MEMORANDUM

The Status of North Vietnam's Electric Power Industry as of 25 May 1967

Summary

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Air strikes through 25 May 1967 against 14 of the [redacted] electric power facilities in North Vietnam have put out of operation about 165,000 kilowatts (kw) of power generating capacity or 87 percent of the national total. North Vietnam is now left with less than 24,000 kw of central power generating capacity.

Both Hanoi and Haiphong are now without a central power supply and must rely on diesel-generating equipment as a power source. The reported reserve power system in Hanoi consisting of five underground diesel stations has an estimated power generating capacity of only 5,000 kw, or less than ten percent of Hanoi's normal needs.

North Vietnam has imported an estimated 2,000 diesel-driven generating units during the past two years. These units probably could not supply more than 15,000 to 20,000 kw of usable power, an amount roughly ten percent of the central generating capacity currently out of operation.

The loss of generating facilities has created severe shortages of power. For all practical purposes power supply to nonessential consumers has been eliminated. Many industrial processes have been fragmented or in some cases completely shut down. Although there is a lack of positive intelligence on the impact of the power shortages, a system of rationing seems imperative. [redacted]

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[redacted] Hanoi may have inaugurated a rationing system on 10 May 1967.

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North Vietnam has had little success in restoring damaged power facilities. The North Vietnamese seem willing to make sustained efforts to restore facilities to partial operation when limited damage permits equipment to be readily salvaged. They are willing, however, to abandon plants when a major reconstruction effort would be required. Reconstruction efforts are highly dependent on foreign technical assistance and equipment.

Complete restoration of the damaged facilities would require from 18 to 24 months, although most of them could be restored to partial operation within a period of two to four months. Current reconstruction efforts are known to be under way at only five of the 14 damaged facilities. The status of possible reconstruction efforts at powerplants struck during the last few months is not known.

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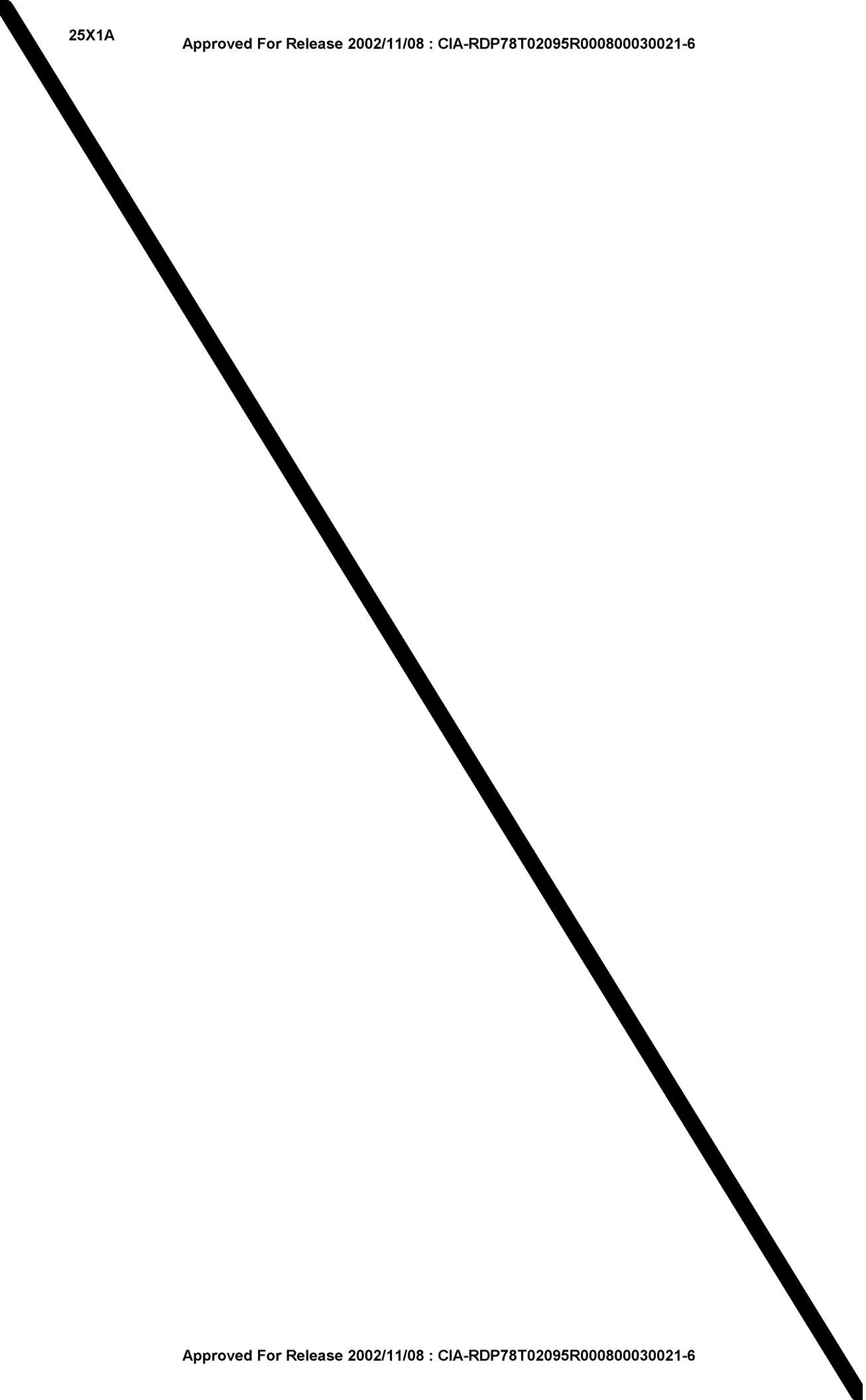

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Effects of Air Strikes on the Electric Power Industry

1. Through 25 May 1967 the Rolling Thunder program had flown a total of 72 strikes against 14 25X1A [redacted] electric power facilities in North Vietnam (see map). The air campaign has put out of operation about 165,000 kw of capacity in the Hanoi-Haiphong power network and in two smaller power systems in the southern part of the country-- 25X1A one which served the Thanh Hoa - Ban Thach - Co Dinh area and one which served the Ben Thuy - Vinh area. The loss represents 87 percent of total national installed capacity of 187,000 kw. North Vietnam is now left with less than 24,000 kw of central power generating capacity. An estimated 10,000 kw of this capacity is accounted for by a large number of small, independent facilities serving single consumers or installations such as agricultural cooperatives, logging enterprises and the like. About 13,400 kw of the remaining capacity is located at five [redacted] 25X1A 25X1A [redacted] facilities which have not been attacked.* 25X1A One of these [redacted] facilities--the 1,200 kw power facility at Thai Nguyen--has been effectively neutralized as a result of strikes directed against 25X1A the Thai Nguyen iron and steel complex.

2. The air attacks have inflicted severe damage on the eight plants of the main network serving the Hanoi-Haiphong area. Damage inflicted by strikes on the Dong Anh substation, the most important substation in the network, will prevent integrated operation of the network for at least two to three months. Table 1 (appended) presents the latest assessment of the damage to each of the electric power facilities in North Vietnam.

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3. An additional powerplant at Bac Giang, which is outside the main network, was put out of operation for a minimum of three months. All four plants in the two smaller power networks around Thanh Hoa and Ben Thuy have been out of service as a result of air strikes during 1965 and 1966. One of these plants--Co Dinh--has been abandoned.

4. The loss of generating capacity at Hon Gai, Uong Bi, Thai Nguyen, and Viet Tri has also eliminated the principal sources of supplementary power formerly received by Hanoi and Haiphong from the main transmission network. Both cities are now completely dependent on diesel generating equipment for power. Hanoi reportedly is obtaining power from a reserve power system consisting of five underground diesel stations. [redacted] 25X1

25X1 [redacted] it is estimated that this system has a power-generating capacity of only 5,000 kw, or less than ten percent of Hanoi's normal needs.*

5. Both Hanoi and Haiphong as well as other consumers can, of course, utilize the estimated 2,000 diesel-driven generating units imported during the past two years. The estimated aggregate capacity of these units [redacted] is 25X1 from 25,000 kw to 30,000 kw. These units cannot, however, be readily operated in parallel with a transmission network, nor are they large enough to meet the demands of heavy, continuous-process industry. Moreover, the usable capacity of these units will be substantially less than their rated capacity. They probably could not supply more than 15,000 to 20,000 kw of usable power, an amount roughly ten percent of the central generating capacity currently out of operation.

The Communist countries produce diesel generating units with capacities of up to 4,000 kw. Units as large as this are rare and none are known to have been provided to North Vietnam.

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6. The neutralization of most of North Vietnam's electric power industry is having widespread effects throughout the country. The loss of generating facilities undoubtedly has created a severe shortage of power and disrupted activities that normally depend on a reliable central power supply. Nonessential consumption of electric power by residences and commercial establishments, and most street lighting have probably been eliminated. The curtailment of industrial power supply almost certainly has caused fragmentation of industrial processes in some cases, and in others has caused complete shutdowns.

7. There are few eye-witness reports about the impact of power shortages. The first positive indication that generating capacity now falls short of meeting demands was a reported announcement that power rationing was instituted in Hanoi on 10 May 1967.

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Restoration of Damaged Facilities

8. The electric power industry has been the major exception to North Vietnam's demonstrated ability to recuperate from the air attacks. There are signs of strains and bottlenecks in North Vietnamese attempts to rebuild the damaged power facilities. Most of the reconstruction requires foreign technical and material assistance. Much of the progress made during 1966 was eliminated by later restrikes. When limited damage permits equipment to be readily salvaged, the North Vietnamese have made persistent efforts to restore facilities to partial operation. They are willing to abandon plants, however, when a major reconstruction effort would be required.

9. Complete restoration of the damaged facilities would require from 18 to 24 months, although most of them could be restored to partial operation within a period of two to four months. Current reconstruction efforts are known to be under way at only five of the 14 damaged facilities. These are

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Uong Bi, Ban Thach, Nam Dinh, Thanh Hoa and Ben Thuy. The estimated time to restore these plants to partial operation are six months for Ban Thach and Nam Dinh, and one to three months for Thanh Hoa and Ben Thuy. Reconstruction of the small plant at Co Dinh has been abandoned. The recent efforts to reconstruct the abandoned facility at Ban Thach tends to confirm the judgment that North Vietnam does have sufficient diesel generators to substitute for the capacity destroyed by bombing. Construction of the large hydroelectric plant at Thac Ba, which was being built with assistance from the USSR, was halted in mid-1966, probably to forestall damage from air strikes. The status of possible reconstruction efforts at power-plants struck during the last few months is not known.

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Table 1

North Vietnam: Extent of Damage to Powerplants

Plant Name	Capacity (Kilowatts)	Description of Physical Damage
Uong Bi	24,000	Severe damage to 3 of 4 turbogenerators and to 3 of 4 boilers.
Hon Gai	15,000	Severe damage or destruction of 5 of 8 boilers, heavy damage to transformer and coal processing buildings.
Haiphong East	7,000	Destruction of boilerhouse, severe damage to turbine hall.
Haiphong West	10,000	Severe damage to 50 percent of boiler capacity, to 1 of 2 cooling towers, and to coal process building.
Bac Giang	12,000	Heavy damage to coal process building and to substation. Light damage to boilerhouse and turbine hall. (Post-strike photography not available since strikes of 20 and 22 May.)
Thai Nguyen	24,000	Severe damage to 2 of 3 boilers and to coal process building.
Viet Tri	16,000	Field reports 50 percent of boilerhouse and of turbine hall severely damaged.

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Table 1

North Vietnam: Extent of Damage to Powerplants
(Continued)

Plant Name	Capacity (Kilowatts)	Description of Physical Damage
Hanoi	32,500	Probably damage to boilerhouse. [redacted] 25X1 [redacted] 25X1
Dong Anh Sub-station	NA	Moderate damage to switch yard and to control building. (Latest photography not available.)
Nam Dinh	7,500	Heavy damage to boiler-house, turbine hall, cooling towers, and coal process building. Current restoration indicates partial operation in several months.
Thanh Hoa	5,000	Heavy damage to boiler-house, turbine hall, and substation. Current restoration indicates partial operation in several months.
Ban Thach	1,000	Heavy damage to turbine hall and substation. Restoration currently in progress.
Co Dinh	1,500	Virtually total destruction of plant.
Ben Thuy	8,000	Severe damage to boiler-house, turbine hall, and substation. Current restoration indicates partial operation in several months.

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Table 2

North Vietnam: Damaged Power Plants and Estimated Restoration Times

Plant Name	Capacity (Kilowatts)	Date of Most Recent Strike	Estimated Months of Restoration Time For Partial Operations	Estimated Months of Restoration Time For Complete Operations
Nam Dinh	7,500	3 Aug 65	2 to 3	12
Ban Thach	1,000	23 Aug 65	2 to 3	12
Uong Bi	24,000	17 Aug 66	6	24
Thanh Hoa	5,000	23 Sep 66	1 to 3	18
Ben Thuy	8,000	29 Oct 66	1 to 3	18
Co Dinh	1,500	4 Nov 66	Reconstruction Abandoned	12
Viet Tri	16,000	19 Mar 67	4	18
Thai Nguyen	24,000	24 Mar 67	4	18
Haiphong East	7,000	21 Apr 67	12	18
Hon Gai	15,000	22 Apr 67	4	18
Haiphong West	10,000	20 May 67	2	18
Hanoi	32,500	21 May 67	N.A.*	N.A.*
Dong Anh Substation	N.A.	22 May 67	2 to 3	6
Bac Giang	12,000	22 May 67	3	6

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